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*JOINT FORCES STAFF COLLEGE*  
JOINT ADVANCED WARFIGHTING SCHOOL



**PROPOSAL FOR A COOPERATIVE SPACE STRATEGY WITH CHINA**

by

Tracey Hayes

Lt Col, USAF

A paper submitted to the Faculty of the Joint Advanced Warfighting School in partial satisfaction of the requirements of a Master of Science Degree in Joint Campaign Planning and Strategy.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Joint Forces Staff College or the Department of Defense.

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1 April 2009

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## **Abstract**

Currently, the U.S. has superior space systems and technology when compared to all other nations. U.S. military operations have become increasingly dependent on the capabilities that space provides and without it, U.S. military power would drastically be rendered less effective and essentially deaf and blind. In order to continue leading in the space arena, the U.S. will have to make political and funding decisions concerning space that could affect the future of space warfare and of national security. Without a specific road ahead, complicated by an era of economic downturn, the U.S. could potentially lose its leadership role in space operations. Arguably, China will be first in line to challenge the U.S. The U.S. response to China's rise as a space power must be reflected in a balanced cooperative strategy in which challenges are managed and opportunities exploited.

To prove that a cooperative strategy is prudent, the current space mission areas will be briefly addressed to give a foundation of current U.S. capabilities. Then the current U.S. space policy and security strategies will be reviewed to establish the legal parameters in place and establish a strategic framework. A review of current Chinese space capabilities, activities and policy will help establish Chinese threat and/or intent. An analysis on why a cooperative strategy is appropriate will transition into a proposed U.S.-China Cooperative Space Strategy.

## Table of Contents

<b>Abstract.....</b>	<b>i</b>
<b>Table of Contents .....</b>	<b>ii</b>
<b>I. Introduction.....</b>	<b>1</b>
<b>II. Current Space Mission Areas/Capabilities.....</b>	<b>3</b>
Space Support .....	4
Force Enhancement.....	4
Space Control.....	6
Force Application.....	7
National Aeronautics and Space Administration (NASA) .....	8
<b>III. Current Space Policy and U.S. Strategy .....</b>	<b>9</b>
1967 Outer Space Treaty .....	10
1972 Anti-Ballistic Missile (ABM) Treaty.....	11
2006 U.S. National Space Policy .....	13
NSS/QDR /NDS/NMS Review.....	16
U.S. Strategic Actions.....	23
<b>IV. Chinese Space Capabilities and Activities Analysis.....</b>	<b>25</b>
History.....	26
Current Military and Civil Space Capability and Organization.....	28
Space Strategy and Doctrine.....	32
Historical Perception of Military Thought.....	38
<b>V. Why Cooperative Strategy? .....</b>	<b>40</b>
Benefits .....	41
Impediments.....	47
<b>VI. US-China Cooperative Space Strategy .....</b>	<b>54</b>
Ends (Objectives).....	55
Ways (Methods).....	57
Means (Resources).....	61
Risks/Challenges.....	62
<b>VII. Conclusion .....</b>	<b>64</b>
<b>Bibliography .....</b>	<b>66</b>
<b>Vita .....</b>	<b>70</b>

## **I. Introduction**

Currently, the U.S. has superior space systems and technology when compared to all other nations. U.S. military operations have become increasingly dependent on the capabilities that space provides and without it, U.S. military power would drastically be rendered less effective and essentially deaf and blind. In order to continue leading in the space arena, the U.S. will have to make political and funding decisions concerning space that could affect the future of space warfare and of national security. Without a specific road ahead, complicated by an era of economic downturn, the U.S. could potentially lose its leadership role in space operations. Arguably, China will be first in line to challenge the U.S. The thesis of this paper is the U.S. response to China's rise as a space power must be reflected in a balanced cooperative strategy in which challenges are managed and opportunities exploited.

The U.S. and Russia have enjoyed a self-imposed 20-year period of refrain from using destructive weapons in space.<sup>1</sup> Until recently, the U.S. and Russia have been the premier space-faring nations. China is gaining ground as the newest space-faring nation. Since 2003, China has successfully completed three manned space flights using an indigenous lift vehicle. In 2008, China's manned mission included its first spacewalk or "extravehicular activity." China also has an array of satellites for communications and remote sensing and is starting to build a new navigation constellation.<sup>2</sup> Clearly, China

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<sup>1</sup> The last USSR ASAT test was conducted in Jun 1982. The last U.S. ASAT test was conducted in Sep 1985. Additionally, to prevent the possibility of exposure to toxic hydrazine, the U.S. destroyed a crippled National Reconnaissance Office satellite on February 20, 2008 using a sea-based missile interceptor.

<sup>2</sup> United States Government, 2008 Report to Congress of the U.S.-China Economic and Security Review Commission, Nov 2008, 157-159.

will be the U.S.'s next near-peer competitor in space and as such, deserves respect and attention. Additionally, the 2006 Quadrennial Defense Review Report matter-of-factly stated that of the major and emerging powers, "China has the greatest potential to compete militarily with the United States and field disruptive military technologies that could over time offset traditional U.S. military advantages absent U.S. counter strategies."<sup>3</sup> This statement indicates that there is concern over China and their emerging military capabilities, but to date there has been little action to develop counter strategies.

Before continuing, it is imperative to explore what is meant by cooperative strategy. Cooperative strategy promotes greater collective security, stability and trust to serve U.S. national interests. The goals of a cooperative strategy must align with the current U.S. national security, defense and military strategies. Collective security efforts are focused on common threats and mutual interests. The strategy is written as a calculated relation of ends, ways, and means balanced by a risk framework. Within this framework, other factors such as assumptions, threats, resources and adversary capabilities must be addressed as well.

While the U.S. has effectively exploited space capabilities to give an overwhelming and asymmetric advantage over adversaries, it has also become a vulnerability that cannot be ignored. In the 2008 U.S.-China Economic and Security Review Commission Report to Congress, it was stated that China views the U.S. dependence on space assets and information technology as its "soft ribs and strategic

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<sup>3</sup> United States, Department of Defense. Quadrennial Defense Review Report, February 2, 2006. <http://www.defenselink.mil/qdr/report/Report20060203.pdf>, accessed 10 Oct 08, 29.

weaknesses.”<sup>4</sup> While U.S. space assets are somewhat unprotected, a miscalculation of China’s true capabilities or intentions is perhaps the greatest U.S. strategic vulnerability. Arguably, with the U.S. leading in space capability and China in its early space development stages, this is the right time to develop and implement strategy to shape the future space operating environment. This is not to say that the U.S. should sit idle while China expands capability, but we have a responsibility to be smart and rational about the approaches we ultimately choose in order to preserve America’s lead in space and to decrease potential vulnerabilities.

To prove that a cooperative strategy is prudent, the current space mission areas will be briefly addressed to give a foundation of current U.S. capabilities. Then the current U.S. space policy and security strategies will be reviewed to establish the legal parameters in place and establish a strategic framework. A review of current Chinese space capabilities, activities and policy will help establish Chinese threat and/or intent. An analysis on why a cooperative strategy is appropriate will transition into a proposed U.S.-China Cooperative Space Strategy.

## **II. Current Space Mission Areas/Capabilities**

Current U.S. doctrine identifies four distinct areas of military space activity through the missions of Space Support, Force Enhancement, Space Control and Force Application.<sup>5</sup> It is also appropriate to discuss civilian space and the National Aeronautics and Space Administration’s (NASA) role.

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<sup>4</sup> 2008 Report to Congress of the U.S.-China Economic and Security Commission, 156. Derived from Wang Huacheng, “The US Military’s ‘Soft Ribs’ and Strategic Weaknesses,” *Liawowang*, Vol. 27, reprinted in *Xinhua Hong Kong Service*, July 5, 2000, in FBIA-CHI-2000-0705, July 25, 2000.

<sup>5</sup> Space mission areas are outlined differently in the current AFDD 2-2 *Space Operations* versus the Joint Publication 3-14 *Joint Doctrine for Space Operations*. The mission areas introduced here are from JP 3-14.

## **Space Support**

Space support operations consist of spacelift, satellite operations and reconstitution of space forces, if required.

Spacelift delivers satellites to their required orbit to initially deploy, sustain or augment satellite constellations supporting military operations. Currently, the U.S. operates spacelift facilities at Vandenberg Air Force Base in California and Cape Canaveral Air Force Station in Florida. Satellite operations are conducted to maneuver, configure and sustain on-orbit assets – referred to as telemetry, tracking and commanding (TT&C). TT&C is executed through both dedicated antennas and common-user networks. The Air Force and Navy both operate satellite control networks. Finally, reconstitution refers to replenishing space forces in the event of satellite failure. This could entail repositioning or reconfiguring remaining assets, augmentation by civil capabilities or replacement of lost assets.<sup>6</sup>

## **Force Enhancement**

The force enhancement mission area includes Intelligence, Surveillance and Reconnaissance (ISR), missile warning, environmental monitoring, communications and Position, Navigation and Timing (PNT). Force enhancement multiplies joint force effectiveness by improving battlespace awareness and providing warfighter support.

ISR helps reveal the location, disposition and intention of the adversary. Information received from ISR assets provides a means to assess these actions through tactical battle damage assessment and operational combat assessment. Missile warning

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<sup>6</sup> United States, Department of Defense, JP 3-14 *Joint Doctrine for Space Operations* (Washington D.C.: US Government Printing Office, January 6, 2009), II-5.

utilizes satellite- and ground-based systems that provide timely detection and warning of an adversary's use of intercontinental ballistic missiles or nuclear detonations to U.S. strategic forces, tactically deployed forces and U.S. allies. Tactical warning notifies operational command centers and deployed forces that a specific threat event is occurring (e.g. surface-to-air missile or theatre ballistic missile). Environmental monitoring provides data on meteorological, oceanographic, and space environmental factors that might affect operations. Environmental monitoring also supports joint intelligence preparation of the operational environment by providing information needed to identify and assess potential adversary courses of action. Imagery capabilities can supplement environmental monitoring by providing joint force planners with current information on surface conditions such as surface trafficability, beach conditions, vegetation and land use. Space-based communications help shape the battlefield by enabling reach-back operations, sustaining two-way data flow, disseminating plans, orders, and force status over long distances and increasing C2 effectiveness, especially in areas with limited or no communications infrastructure.<sup>7</sup> Satellite communications also provide critical connectivity for maneuver forces whose rapid movement and deployments take them beyond inherent line of sight communication networks. Finally, PNT delivers precise, reliable position and timing information via the Global Positioning System satellite that permits joint forces to more effectively plan, train, coordinate, and execute operations. Precision timing provides joint forces the capability to synchronize operations by

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<sup>7</sup> Reachback operations draw from support databases in the continental United States.

improving communications security and effectiveness. PNT also enables the use of precision-guided munitions, reducing collateral damage.<sup>8</sup>

### **Space Control**

Space control operations provide freedom of action in space for friendly forces while, when directed, denying it to an adversary. Space control missions include protection, surveillance of space, prevention, and negation functions.

Providing freedom of action in space includes protection and surveillance. Space assets are protected through active and passive defense measures to ensure friendly space systems operate properly. Space control requires robust space surveillance for continual awareness of orbiting objects, threat detection, identification, and location and predictive analysis of adversarial space capability. Denying freedom of action in space to the enemy includes prevention and negation. Prevention utilizes measures to preclude an adversary's hostile use of U.S. space systems and services. Prevention can be accomplished through military, diplomatic, political and economic means as appropriate. Negation consists of measures taken to deceive, disrupt, deny, degrade or destroy an adversary's space capabilities.<sup>9</sup>

Concern has been mounting over U.S. Air Force (USAF) counterspace doctrine. The USAF published AFDD 2-2.1 Counterspace Operations in Aug 04. This document declared that protecting U.S. space assets have both defensive and offensive elements. According to Joan Johnson-Freese, U.S. Naval War College Department Chair of National Security Studies, this alludes to the use of space weapons.<sup>10</sup> Johnson-Freese

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<sup>8</sup> JP 3-14 *Joint Doctrine for Space Operations*, II-3.

<sup>9</sup> *Ibid*, II-5.

<sup>10</sup> Joan Johnson-Freese, "Space as a Strategic Asset," New York: Columbia University Press, 2007, 2.

goes on to speculate that the release was low key to see how much notice it would draw. She also notes that in May 05, the USAF requested administration approval of a directive of the National Space Policy to “move the United States closer to fielding offensive and defensive space weapons.”<sup>11</sup> She surmises that these two events indicate an alarming trend. The ambitions of the United States are moving toward offensively and defensively weaponizing space, while the rest of the world primarily considers space as a pre-requisite of globalization and is fearful that the U.S. has intentions to arm the space environment. Furthermore, she indicates that this is contradictory to U.S. space policy.<sup>12</sup> The U.S. Space Policy will be reviewed in Chapter III.

### **Force Application**

Force application consists of attacks against terrestrial-based targets carried out by military weapon systems operating in, or through, space. The force application mission area includes ballistic missile defense and force projection. Currently, there are no force application assets operating in space.<sup>13</sup>

While there are currently no U.S. space-based force application platforms on orbit, a commission chartered to assess the U.S. national security space management and organization (commonly referred to as the 2001 Space Commission) cautioned the Department of Defense (DoD) to not ignore this possibility. The commissioners acknowledged the sensitivity that surrounds the notion of weapons in space for offensive or defensive purposes.

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<sup>11</sup> *Ibid*, 2.

<sup>12</sup> *Ibid*, 2.

<sup>13</sup> However, Air Force Space Command (AFSPC) does maintain and operate the land-based Intercontinental Ballistic Missile (ICBM) force.

But, they also argued, “that to ignore the issue would be a disservice to the nation.”<sup>14</sup>

The commissioners expressed that the U.S. Government should vigorously pursue the capabilities called for in the National Space Policy<sup>15</sup> to ensure that the President will have the option to deploy weapons in space to deter threats and, if necessary, defend against attacks on U.S. interests.<sup>16</sup>

Combatant Commanders have requirements that cannot always be solely provided by military space capabilities. Accordingly, DoD’s space capabilities can be supplemented through civil, commercial, international, allied and other U.S. Government agency capabilities. Capabilities that can be fulfilled by non-DoD assets include communications, imagery and environmental monitoring.

U.S. civil space capabilities offer a potential cooperative opportunity with China and, as such, deserve mention. The National Aeronautics and Space Administration (NASA) fulfills the U.S. civil space capabilities and will be briefly discussed next.

### **National Aeronautics and Space Administration (NASA)**

NASA is the civilian agency that furthers U.S. civil interests in the space environment. NASA’s mission is “to pioneer the future in space exploration, scientific discovery and aeronautics research.”<sup>17</sup> NASA is divided into four mission directorates and each have distinct mission. They are as follows:

Aeronautics: pioneers and proves new flight technologies that improve our ability to explore and which have practical applications on Earth;

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<sup>14</sup> United States, *Report of the Commission to Assess United States National Security Space Management and Organization*, (Washington D.C.: US Government Printing Office, 2001), Ch 2, 17.

<sup>15</sup> Refers to the 1996 U.S. National Space Policy.

<sup>16</sup> *Report of the Commission to Assess United States National Security Space Management and Organization*, Ch 2, 17.

<sup>17</sup> National Aeronautics and Space Administration, <http://www.nasa.gov/home/index.html>, accessed 24 Jan 09.

Exploration Systems: creates new capabilities and spacecraft for affordable, sustainable human and robotic exploration;  
Science: explores the Earth, moon, Mars and beyond; charts the best route of discovery; and reaps the benefits of Earth and space exploration for society;  
Space Operations: provides critical enabling technologies for much of the rest of NASA through the space shuttle, the International Space Station and flight support.<sup>18</sup>

With the current space mission areas outlined, a review of current U.S. space policy and strategy will help establish the legal parameters and strategic framework presently in place.

### **III. Current Space Policy and U.S. Strategy**

Before creating strategy, one must be aware of the existing U.S. policies and security strategies in order to provide a baseline from which to begin. Constraints and restraints will be realized by examining these documents. There are several documents encompassing the U.S. space policy, but a few form the cornerstone of it in an international context and are worth mentioning. Those documents providing the U.S. space policy context are the 1967 Outer Space Treaty, the 1972 Anti-Ballistic Missile Treaty and the 2006 U.S. National Space Policy. The documents currently establishing the U.S. security strategy are the 2006 Quadrennial Defense Review (QDR), the 2006 National Security Strategy (NSS), the 2008 National Defense Strategy (NDS) and the 2004 National Military Strategy. However, the common axiom that “actions speak louder than words” also comes into play in determining the guidelines within which the U.S. is willing to cooperate. Hence, U.S. strategic actions will also be reviewed.

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<sup>18</sup> *Ibid.*

### 1967 Outer Space Treaty

The 1967 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies was entered into force on 16 Oct 1967. The purpose of the treaty was to prevent "a new form of colonial competition" and the possible damage that self-seeking exploitation might cause.<sup>19</sup> The treaty has been adopted by 125+ countries to include the U.S., Russia and China.<sup>20</sup>

The treaty generally calls for the peaceful use of outer space and the continued progress of exploration to benefit all mankind. The essence of the arms control provisions is in Article IV. First, it establishes that the States Parties to the Treaty are not to place any objects carrying nuclear weapons or any other kinds of weapons of mass destruction in orbit around the Earth, install such weapons on celestial bodies, or otherwise station in outer space. Second, it limits the use of the moon and other celestial bodies exclusively to peaceful purposes and expressly prohibits their use for establishing military bases, installations, or fortifications; testing weapons of any kind; or conducting military maneuvers.<sup>21</sup> So, as written, this treaty does not prohibit conventional weapons orbiting in space.

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<sup>19</sup> United States. Department of State. *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies*. Washington D.C.: US Government Printing Office, October 10, 1967, Available at <http://www.state.gov/t/ac/trt/5181.htm>, 1, accessed 10 Nov 08.

<sup>20</sup> China accepted accession of the treaty in 1983. *Ibid*, 4-7.

<sup>21</sup> *Ibid*, 2 (Article IV).

The next document to place this topic into context is the 1972 Treaty between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Anti-Ballistic Missile (ABM) Systems, commonly known as the 1972 ABM Treaty.

### **1972 Anti-Ballistic Missile (ABM) Treaty**

In the 1972 Treaty on the Limitation of Anti-Ballistic Missile Systems, the U.S. and the Soviet Union agreed that each country may have only two ABM deployment areas.<sup>22</sup> Each country would be allowed to build ABM systems to protect its capital and another to protect an ICBM launch area. The ABM systems were restricted so that they would not be able provide a nationwide ABM defense or become the basis for developing one. Therefore, each country would maintain unchallenged the penetration capability of the others retaliatory missile launches.<sup>23</sup>

There were several significant limitations placed on both countries. The number of interceptor missiles and launchers at each site were limited to 100. The number and technical characteristics of the radars specific to the ABM system were spelled out in very specific detail. Qualitative improvement on their ABM technology, e.g. launchers capable of launching more than one interceptor at a time, rapid reload of launchers and interceptors with more than one warhead, were limited. Both countries understood the importance of radars intended to give early warning of strategic ballistic missile attack. Therefore, these radars were not prohibited, but they were to be located around the

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<sup>22</sup> Two areas were originally agreed upon, but later changed to one.

<sup>23</sup> United States, Department of State, *Treaty Between The United States Of America And The Union Of Soviet Socialist Republics On The Limitation Of Anti-Ballistic Missile Systems*. Washington D.C.: US Government Printing Office, October 3, 1972 available from <http://www.state.gov/www/global/arms/treaties/abm/abm2.html>, 1.

perimeters of each country and directed outward so they could not contribute to the effectiveness of the ABM defense system. The impact of technology in relation to the potential imbalance of capability was also addressed. The U.S. and Soviet Union both agreed to prohibit development, testing or deployment of sea-based, mobile land-based, air-based or space-based ABM systems and their components. The Treaty addressed the possibility of future technology leading to the development of new ABM systems and agreed that limiting such systems would be discussed in accordance with the Treaty's provisions for consultation and amendment.<sup>24</sup> The Soviet Union developed an ABM system around Moscow, but the U.S. never developed or deployed such system.

After months of trying to persuade Russia to dissolve the 1972 ABM Treaty and negotiate a new strategic agreement, President Bush announced on 14 Dec 01 that the U.S. would unilaterally withdraw from the Treaty. Bush stated, "I have concluded the ABM treaty hinders our government's ability to develop ways to protect our people from future terrorist or rogue state missile attacks."<sup>25</sup>

The immediate speculation as to the potential consequences of unilateral withdrawal ranged from strained relationships with allies to spurring a new arms race. President Bush and administration officials claimed that the decision would now allow the U.S. to proceed with further missile defense system development. China's President Jiang Zemin stated that China opposed the U.S. missile defense program and the U.S. withdrawal. He further stated that there's a need for multilateral efforts to ensure world

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<sup>24</sup> *Ibid*, 1.

<sup>25</sup> Perez-Rivas, Manuel, "U.S. Quits ABM Treaty", CNN.com, 14 Dec 2001, available from [http://archives.cnn.com/2001/ ALLPOLITICS /12/13/rec.bush.abm/](http://archives.cnn.com/2001/ALLPOLITICS/12/13/rec.bush.abm/), accessed 5 Dec 08.

peace.<sup>26</sup> White House Press Secretary, Ari Fleischer stated that President Bush had assured Jiang that the missile defense system “is not a threat to China.”<sup>27</sup> At the time of U.S. withdrawal, the U.S. had conducted five missile defense tests of which three had been successful.<sup>28</sup>

The next document to help put U.S. space strategy into focus is the 2006 U.S. National Space Policy.

### **2006 U.S. National Space Policy**

Presidential decision documents and policies are obviously important in determining the direction, emphasis and management of U.S. Government activities. The 2006 National Space Policy (NSP) allows a transparent glance into generic, over-arching U.S. space priorities.

President Bush signed the 2006 NSP on August 31, 2006 which officially superseded the previous 1996 NSP crafted by the Clinton administration. The 2006 NSP was released on October 6, 2006 - the Friday before the Columbus Day weekend – which some claim was a cunning method to avoid media attention.<sup>29</sup>

The goals as stated by the 2006 NSP are to:

- Strengthen the nation's space leadership and ensure that space capabilities are available in time to further U.S. **national security**, homeland security, and foreign policy objectives;
- Enable unhindered U.S. operations in and through space to defend our interests there;

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<sup>26</sup> *Ibid*, 3.

<sup>27</sup> *Ibid*, 3.

<sup>28</sup> Knox, Olivier, “Bush Announces U.S. Withdrawal from 1972 ABM Treaty.” Available from <http://www.spacedaily.com/news/bmdo-01zzo.html>, 2.

<sup>29</sup> Theresa Hitchens. “The Bush National Space Policy: Contrasts and Contradictions.” *Center for Defense Information*, October 13, 2006, <http://www.cdi.org/program/document.cfm?DocumentID=3692&StartRow> (accessed 22 Dec 08), 1.

- Implement and sustain an innovative human and robotic exploration program with the objective of extending human presence across the solar system;
- Increase the benefits of civil exploration, scientific discovery, and environmental activities;
- Enable a dynamic, globally competitive domestic commercial space sector in order to promote innovation, strengthen U.S. leadership, and protect **national**, homeland, and economic **security**;
- Enable a robust science and technology base supporting **national security**, homeland security, and civil space activities; and
- Encourage international cooperation with foreign nations and/or consortia on space activities that are of mutual benefit and that further the peaceful exploration and use of space, as well as to advance **national security**, homeland security, and foreign policy objectives.<sup>30</sup> [Emphasis added]

In a distinct departure from the 1996 NSP, national security was given high priority in articulating the goals of the U.S. space program. In comparing the two, the 1996 NSP stated five goals in which only two mention national security; of the seven goals cited in the 2006 version, four mention national security.<sup>31</sup> Clearly, the security environment has drastically changed since 1996, giving credence to the renewed emphasis. However, the new Obama administration may direct emphasis away from national security, akin to the 1996 NSP in a new space policy yet to be published. President Obama's stance on U.S. space activities will be discussed later in this chapter.

In order to achieve the aforementioned goals, the 2006 NSP states that the U.S. Government shall: "Develop Space Professionals; Improve Space System Development and Procurement; Increase and Strengthen Interagency Partnerships; and Strengthen and Maintain U.S. Space-Related Science, Technology, and Industrial Base."<sup>32</sup> These methods of achieving the stated goals address all, but one goal. That is to "encourage

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<sup>30</sup> U.S. National Space Policy of 2006, August 31, 2006. <http://www.nss.org/resources/library/spacepolicy/2006NationalSpacePolicy.htm> (accessed 29 Oct 08), 2.

<sup>31</sup> Theresa Hitchens. "The Bush National Space Policy: Contrasts and Contradictions," 3.

<sup>32</sup> U.S. National Space Policy of 2006, 2-3.

international cooperation with foreign nations and/or consortia on space activities.” This is curiously covered in its own paragraph titled “International Space Cooperation”. This paragraph mentions the following areas for potential international cooperation: space exploration; space surveillance (space situational awareness); and Earth-observation systems. Further, it calls on the Secretary of State to carry out diplomatic and public diplomacy efforts to “build an understanding of and support for U.S. national space policies and programs and to encourage the use of U.S. space capabilities by friends and allies.”<sup>33</sup> Obviously, interagency coordination is required for success. The 2006 NSP also infers the U.S.’s willingness to cooperate with other countries. What it does not state are the conditions upon which cooperative sharing can occur.

While much of the previous policy’s language has been incorporated into the 2006 NSP, critics argue that there are also subtle differences, aggregating to a more unilateralist vision of the U.S. role in space. While the document stops short of endorsing a strategy of war-fighting in, from and through space, it does communicate a clear emphasis on military actions to not only protect U.S. space assets, but also to deny enemy use of the space environment. Indeed, in the third paragraph, the 2006 NSP states that, “Freedom of action in space is as important to the United States as air and sea power.”<sup>34</sup> This seems to indicate that the administration’s focus on national security space is emphasized on military power and competition instead of other forms of national power such as diplomacy or economics. Additionally, the policy rejects the “development of new legal regimes or other restrictions that seek to prohibit or limit U.S. access to or use

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<sup>33</sup> *Ibid*, 7.

<sup>34</sup> *Ibid*, 1.

of space.”<sup>35</sup> It is reasonable to say that when unclassified public policy documents are written and released, there are more than just a few internal intended recipients. There are also external, either intended or unintended, audiences that may pay attention. The perceptively forceful emphasis on national security may merely be considered a deterrent maneuver for space protection by the U.S. government. However, it may also serve as a challenge for other capable nations to “test” the U.S.’s declaration. Interestingly, the emphasis on military power and competition may indirectly indicate the Bush administration was leery of cooperative endeavors.

Since developing strategy in a vacuum is not prudent, one must also review the current U.S. security strategies. Therefore, a cursory review of the goals of the current National Security Strategy (NSS), Quadrennial Defense Review (QDR), National Defense Strategy (NDS) and National Military Strategy (NMS) will be conducted.

#### **NSS/QDR /NDS/NMS Review**

The 2006 National Security Strategy begins by immediately stating the policy of the U.S. “It is the policy of the United States to seek and support democratic movements and institutions in every nation and culture, with the ultimate goal of ending tyranny in our world.”<sup>36</sup> Furthermore, the overarching goal is “to help create a world of democratic, well-governed states that can meet the needs of their citizens and conduct themselves responsibly in the international system.” This, President Bush claims is “the best way to provide enduring security for the American people.”<sup>37</sup>

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<sup>35</sup> *Ibid*, 2.

<sup>36</sup> United States. The National Security Strategy of the United States of America, March 2006. <http://www.whitehouse.gov/nsc/nss/2006/>, accessed 10 Oct 08, 1.

<sup>37</sup> *Ibid*, 1.

In order to meet the policy, goal and intent of the NSS, there are nine specific tasks outlined that form the core of the document. Of those, one directly relates to the topic of developing a cooperative space strategy with China, “Develop agendas for cooperative action with other main centers of global power.”<sup>38</sup> The strategy forthrightly proclaims that while the U.S. does not “seek to dictate to other states the choices they make, we do seek to influence the calculations on which those choices are based.” Adding suitably, “We also must hedge appropriately in case states choose unwisely.”<sup>39</sup>

The 2006 NSS summarizes major geographic areas of the world, where there has been success and where more challenges exist. The majority of the East Asia section is dedicated to China. The U.S. recognizes China’s growth into a global player and states that it

must act as a responsible stakeholder that fulfills its obligations and works with the United States and others to advance the international system that has enabled its success: enforcing the international rules that have helped China lift itself out of a century of economic deprivation, embracing the economic and political standards that go along with that system of rules, and contributing to international stability and security by working with the United States and other major powers.<sup>40</sup>

The NSS goes on to say that the U.S. welcomes the emergence of a peaceful and prosperous China. The NSS directly addresses the Chinese leadership by stating that it cannot stay on a peaceful path while “holding onto old ways of thinking and acting that exacerbate concerns throughout the region and the world.”<sup>41</sup> The old ways as defined are military expansion in a “non-transparent way,” “locking up” energy supplies around the

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<sup>38</sup> *Ibid*, 36.

<sup>39</sup> *Ibid*, 36

<sup>40</sup> *Ibid*, 41.

<sup>41</sup> *Ibid*, 41.

world by directing the markets rather than opening them and supporting resource rich countries without “regard to the misrule at home or misbehavior abroad of those regimes.”<sup>42</sup> Finally, the NSS urges China to allow their population the right to assemble, speak and worship in order to reach its full potential. The U.S. states that its overall strategy for China is “to encourage China to make the right strategic choices for its people, while we hedge against other possibilities.”<sup>43</sup>

The 2006 Quadrennial Defense Review (QDR) provides an assessment of the current defense situation and shapes a common roadmap or vision of where the U.S. needs to go in order to fulfill the Defense Department’s responsibilities to the American people. The QDR focuses on four priorities: “Defeating terrorist networks; Defending the homeland in depth; Shaping the choices of countries at strategic crossroads; and Preventing hostile states and non-state actors from acquiring or using WMD.”<sup>44</sup> For the purpose of this paper, the priority of *shaping choices of countries at strategic crossroads* will be examined.

The concern over China is mounting. The QDR acknowledges that China has continually invested heavily in its military since the mid-1990s, especially in its strategic arsenal and capabilities designed to improve the ability to project power beyond its border. The most crucial issue is the shroud of secrecy from which China operates. Without transparency, it is difficult to assess Chinese motivations, intentions and decision-making processes. Within the context of the QDR, the U.S. “encourages China

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<sup>42</sup> *Ibid*, 41.

<sup>43</sup> *Ibid*, 42.

<sup>44</sup> United States, Department of Defense. Quadrennial Defense Review Report, February 2, 2006. <http://www.defenselink.mil/qdr/report/Report20060203.pdf> (accessed 10 Oct 08), 3.

to take actions to make its intentions clear and clarify its military plans.”<sup>45</sup> The QDR predicts that China will likely continue making large investments in expensive, asymmetric military capabilities, emphasizing among other means, counter-space operations.<sup>46</sup>

The QDR states that shaping choices requires a “balanced approach, one that seeks cooperation, but also creates prudent hedges against the possibility that cooperative approaches may fail to preclude future conflict.”<sup>47</sup> While the QDR does maintain that the U.S. “must possess sufficient capability to convince any potential adversary that it cannot prevail in a conflict and that engaging in conflict entails substantial strategic risks beyond military defeat,”<sup>48</sup> it continues to propose some methods to increase cooperation among those at the strategic crossroads. In the spirit of the “balanced approach,” the QDR lists both cooperative and hedging methods. The cooperative methods include

1) security cooperation and engagement activities such as joint training exercises, senior staff talks, officer and foreign internal defense training to increase understanding, strengthen allies and partners, and accurately communicate U.S. objectives and intents and 2) improved language and cultural awareness to develop a greater understanding of emerging powers and how they may approach strategic choices.<sup>49</sup>

The hedging methods applicable to this thesis are 1) “prompt and high-volume global strike to deter aggression or coercion, and if deterrence fails, to provide a broader range of conventional response options to the President.” and 2) “integrated defenses against short-, intermediate-, and intercontinental-range ballistic and cruise missile

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<sup>45</sup> *Ibid*, 29.

<sup>46</sup> *Ibid*, 29.

<sup>47</sup> *Ibid*, 30.

<sup>48</sup> *Ibid*, 31.

<sup>49</sup> *Ibid*, 31.

systems.”<sup>50</sup> One could easily assimilate that the two hedging considerations rely on an assumption that China may be developing space weapons and the counter U.S. strategy would possibly include weapons in space. Arguably, listed intentions such as these do little more than fuel the rage of anti-U.S. powers and influences.

The 2008 National Defense Strategy (NDS) builds on lessons learned and insights from previous operations and strategic reviews, including the 2006 QDR. The NDS is well nested with the NSS and QDR and has many similarities in the language of the documents. The NDS begins with a cursory overview of the strategic environment. The stated objective in dealing with China is to “mitigate near term challenges while preserving and enhancing U.S. national advantages over time.”<sup>51</sup> The NDS further states that it is likely that China will continue to enhance its conventional military capabilities, especially anti-access and area denial assets to include a full range of long-range strike, space and information warfare capabilities. The Secretary of Defense predicts that our interaction with China will be “long term and multi-dimensional” and will include “peacetime engagement between defense establishments as much as fielded combat capabilities.”<sup>52</sup> These statements of objectives and predictions appear to indicate that DoD is planning or at least willing to expand military-to-military relationships with China.

Of the five overall objectives (ends) in the NDS, two pertain to China. The first is promoting security and the second is deterring conflict. The strategy of promoting

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<sup>50</sup> *Ibid*, 31.

<sup>51</sup> United States, Department of Defense. National Defense Strategy, June 2008. <http://www.defenselink.mil/news/2008%20national%20defense%20strategy.pdf>, accessed 10 Oct 08, 3.

<sup>52</sup> *Ibid*, 3.

security is carried forward from the NSS and QDR by reconfirming that the U.S. welcomes the rise of a peaceful and prosperous China, but encourages China to be a responsible stakeholder by taking on a greater share of burden for the “stability, resilience and growth of the international system.”<sup>53</sup> Due to the uncertainties surrounding the future with China, the NDS restates the NSS strategy of making correct strategic choices and hedging against other possibilities. The key piece to this NDS approach is to establish and pursue continuous strategic dialogue with China with the intent to improve communication and “reduce the risk of miscalculation.”<sup>54</sup>

The overarching strategy of shaping and hedging to address China’s growing military capabilities and the uncertainties surrounding their intent are interwoven throughout all of the current U.S. security strategy documents. This strategy also plays into the next pertinent objective of deterring conflict. The NDS states that deterrence is key to preventing conflict and enhancing security. To be effective, deterrence requires “influencing the political and military choices of an adversary, dissuading it from taking an action by making its leaders understand that either the cost of the action is too great, is of no use, or unnecessary.”<sup>55</sup> Deterrence also involves credibility which requires us to have the ability to prevent an attack, respond decisively and swiftly to an attack to discourage such attack and then strike accurately as necessary if deterrence fails. Deterrence must cover a wide spectrum of threats to include state and nonstate actors.

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<sup>53</sup> *Ibid*, 10.

<sup>54</sup> *Ibid*, 10.

<sup>55</sup> *Ibid*, 12.

The NDS admits that the U.S. must “tailor deterrence to fit particular actors, situations, and forms of warfare.”<sup>56</sup>

The NDS outlines five methods (ways) to achieve the objectives. Of those, three directly influence the development of a cooperative space strategy with China. They are “shaping the choices of key states; strengthening and expanding alliances and partnerships; and securing U.S. strategic access and retaining freedom of action.”<sup>57</sup>

The NDS method of *shaping the choices of key states* complements the QDR priority of *shaping the choices of countries at strategic crossroads*. Although China is mentioned only once as a desire to “anchor China and Russia as stakeholders in the system,” the overarching purpose of shaping is to “foster accountability, cooperation and mutual trust.”<sup>58</sup>

Many of the same concepts are repeated in the next method of *strengthening and expanding alliances and partnerships*. However, the language in the NDS is very open, almost welcoming new approaches, “We should not limit ourselves to the relationships of the past. We must broaden our ideas to include partnerships for new situations or circumstances.”<sup>59</sup> The conditions placed on this tactic are respect, reciprocity, and transparency.<sup>60</sup> This, along with the realization that both China and Russia are important partners for the future, opens up the door to build collaborative and cooperative relationships with them.

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<sup>56</sup> *Ibid*, 12.

<sup>57</sup> *Ibid*, 14.

<sup>58</sup> *Ibid*, 14.

<sup>59</sup> *Ibid*, 15.

<sup>60</sup> *Ibid*, 15.

Finally, the NDS claims the third method of *securing U.S. strategic access* (of the global commons) and *retaining freedom of action* creates global prosperity and benefits for all. This positive effect is only possible with the “basic belief that goods shipped through air or by sea, or information transmitted under the ocean or through space, will arrive at their destination safely.”<sup>61</sup> Further, access and freedom of action are important to maintain because the “development and proliferation of anti-access technologies and tactics threatens to undermine this belief.”<sup>62</sup>

The next document that shapes military strategy is the National Military Strategy (NMS). The current version of the NMS was published in 2004 and does not nest well with the current NSS, QDR or NDS. Although the national military objective of *preventing conflict and surprise attacks* could apply to China, China is not mentioned in the document and to do so would purely be conjecture.

### **U.S. Strategic Actions**

U.S. policy and strategy frameworks provide an outward indication of where we see ourselves and others in the world and, in some instances such as strategy development, how we envision the future state of affairs and what we are willing to do in order to achieve our aims. They also provide the U.S a means to convey this information to others. While all of these portray a mostly optimistic outlook on our relationship with China, it is most often our actions that speak louder than words and cause turbulence in the strategic environment.

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<sup>61</sup> *Ibid*, 16.

<sup>62</sup> *Ibid*, 16.

One of these moments of action occurred in October 2005 during a meeting of the United Nations Conference on Disarmament (CD). Particularly, the session to discuss the Prevention of an Arms Race in Outer Space (PAROS) when a call was made for negotiations which required each nation to vote either for or against the negotiations. A large number of nations have long pushed for talks to ban space weapons and the U.S. has long been opposed to such talks. In the past, the U.S. had abstained from voting to ban space weapons, but in October 2005 the U.S. voted for the first time against a call for negotiations. This was the only “no” vote against 160 “yes” votes.<sup>63</sup> This vote was obviously inextricably linked to the further development of the U.S. missile defense capability. However, in 2008, the U.S. did show progress in this area in that they responded, although critically, to a draft “Treaty on the Prevention of the Placement of Weapons in Outer Space and of the Threat or Use of Forces Against Outer Space Objects” which was jointly proposed by Russia and China.<sup>64</sup>

In a stark departure from the Bush administration, the Obama administration openly opposes space weaponization. In the White House Defense Agenda, President Obama claims that he will ensure freedom of space by “seeking a worldwide ban on weapons that interfere with military and commercial satellites.”<sup>65</sup> Further, he believes the U.S. must show leadership by engaging other nations in discussions of how best to stop the slow slide toward a new battlefield. With a draft treaty currently on the table, the

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<sup>63</sup> Marc Kaufman, “Bush Sets Defense As Space Priority,” *Washington Post*, October 18, 2006. <http://www.washingtonpost.com/wpdyn/content/article/2006/10/17/AR2006101701484.html>, accessed 29 Oct 08.

<sup>64</sup> All of the documents from the Conference on Disarmament and the PAROS deliberations can be found at <http://daccessdds.un.org>.

<sup>65</sup> United States, The White House, 2009 Defense Agenda, <http://www.whitehouse.gov/agenda/defense/>, accessed 28 Mar 09.

next year's CD would be the opportune time for the U.S. to act in accordance with the overtly stated NSP objective of cooperation and to demonstrate its space leadership role.

#### **IV. Chinese Space Capabilities and Activities Analysis**

A review of the current U.S. space capabilities, policies, treaties, strategy along with a quick glance at how actions can sometimes speak louder than doctrine has revealed that the space issues that the world faces are complex and could even be considered anarchic. Miscalculation of either the U.S. or China's intentions in space and the potential response to those intentions could be disastrous and might be construed as a strategic vulnerability for the U.S. Sun Tzu says it's important to know yourself and the enemy. "By perceiving the enemy and perceiving ourselves, there will be no unforeseen risks in battle. By not perceiving the enemy yet perceiving ourselves, there will be partial victory and partial loss. By not perceiving the enemy and not perceiving ourselves, every battle will be an unforeseen risk."<sup>66</sup> China, of course, is not considered an enemy, but it is critical to know the background of the country for which you are developing strategy if success is the aim.

When developing strategy, one must thoroughly review the underlying features that will help guide movement toward the desired ends, ways, means and risk assessment. Those selected features are historical perspective, organization and capabilities, policy and doctrine and intent or threat. Only after developing that understanding through a thorough analysis will the strategy resonate with reason and logic. The first feature that will be reviewed is the history of Chinese space activity.

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<sup>66</sup> Sun Tzu, Translated by J. H. Huang, "Sun-Tzu, The New Translation," (New York: William Morrow and Company, Inc, 1993), 52.

## History

China's foray into the space arena was with the development of the Long March family of missiles. Tseing Weichang, an immigrant to the U.S. from China, developed China's first long-range military ballistic missiles (which have a dual use as space launch vehicles). Tseing Weichang was educated in Canada, then worked for the U.S. government at the Jet Propulsion Laboratory in Pasadena, California, only to be forced back to his homeland in 1949 as a result of America's anti-communist push.<sup>67</sup> The Peoples Republic of China (PRC) under Mao Zedong opened its first Missile and Rocket Research Institution on October 8, 1956.<sup>68</sup> Mao Zedong sought to push the Chinese Communist Party (CCP) to facilitate two key goals at once through missile and space launch capabilities: military modernization and economic development.<sup>69</sup> The PRC launched its first satellite -- known as the Dongfanghong-1 (DFH-1)-- to Earth orbit on its Long March rocket on April 24, 1970. The 390-lb. electronic ball floated around the Earth blaring the patriotic song "The East Is Red."<sup>70</sup> Several experimental satellites and then the recoverable Fanhui Shi Weixing (FSW) satellite followed this in 1975. The FSW was a reconnaissance satellite, making the PRC one of only three space-based reconnaissance powers.<sup>71</sup>

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<sup>67</sup> Space Today, "History of China in Space," Space Today Online, <http://www.spacetoday.org/China/ChinaHistory.html> (accessed 23 Dec 08).

<sup>68</sup> Space Today. 2.

<sup>69</sup> James C. Mulvenon and Andrew N. D. Yang, *A Poverty of Riches: New Challenges and Opportunities in PLA Research* (Santa Monica: RAND Corporation, 2003): 31, [http://www.rand.org/pubs/conf\\_proceedings/2005/CF189.pdf](http://www.rand.org/pubs/conf_proceedings/2005/CF189.pdf) (accessed 27 Dec 08).

<sup>70</sup> Joan Johnson-Freese, *Changing Patterns of International Cooperation in Space* (Malabar, FL: Orbit Book Company, Inc., 1990), 73.

<sup>71</sup> The other two are the U.S. and Russia.

The priority for space under Mao had been national prestige and national security. Those goals changed with the accession of Deng Xiaoping to the Chinese premiership. Deng's Four Modernizations program placed highest priority on economic development and scientific developments that would have developmental payoffs. The Chinese space program therefore had to "concentrate on urgently needed and practical applied satellites."<sup>72</sup> While the plan was to take a practical approach, space was placed at a lower priority for much of the Deng era.

In March 1986, the creation of an effort to position the PRC to exploit high technology, moved space back into a major position -- this was dubbed Plan 863. Plan 863 devoted priorities to developing high-tech research in seven areas, including aerospace technology, which Deng declared as the "highest priority technology program."<sup>73</sup> Plan 863 enabled aerospace technology to contribute to many other national economic development efforts and is speculated to have revived high-level support for space. For example, it is reported that some 1,800 aerospace efforts were either converted or otherwise shifted towards commercial production. Chinese computer and information technology development, as well as automated control systems and industrial robots, are all at least partially attributed to this shift towards civilian use by the aerospace industry.<sup>74</sup>

Since the DFH-1 in 1970, the PRC has launched more than 50 satellites. These primarily fall into three primary categories: communications, meteorological, and

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<sup>72</sup> Mulyenon, RAND report, 32.

<sup>73</sup> *Ibid*, 32.

<sup>74</sup> *Ibid*, 32.

retrievable remote sensors. Of particular note, almost all have been dual-use in nature, providing both civil and military capabilities.<sup>75</sup>

A discussion of current Chinese space capabilities will assist in understanding how technologically advanced China has become, as compared to the U.S. Their quick progress and heavy investment in space will give insight into why the U.S. should be concerned with their intent.

### **Current Military and Civil Space Capability and Organization**

China's space program consists of a wide range of activities, including intelligence and reconnaissance, earth monitoring, research and development, scientific exploration, communications and media, and command and control. The program contributes to China's military power, economic development, and internal stability. China also looks to space as a way to bolster its national prestige.

Today, China's space program is comprehensive and incorporates all features from initial engineering design to launch. Further, they are fully capable of managing exploitation of data from space sensors to controlling their operations through telemetry, tracking and commanding (TT&C).<sup>76</sup> China maintains a large and well-diversified research and development base. There are currently approximately 200,000 engineers working in various disciplines, to include space nuclear power, propulsion, materials, multispectral sensors, and robotics.<sup>77</sup> Although China has an extensive number of

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<sup>75</sup> *Ibid*, 35.

<sup>76</sup> Telemetry, tracking and commanding (TT&C) are conducted to maneuver, configure and sustain on-orbit assets.

<sup>77</sup> United States Government, 2008 Report to Congress of the U.S.-China Economic and Security Review Commission, Nov 2008. [http://www.uscc.gov/annual\\_report/2008/annual\\_report\\_full\\_08.pdf](http://www.uscc.gov/annual_report/2008/annual_report_full_08.pdf) (accessed 30 Nov 08), 158.

specialists, it is easy to conclude that they have saved an immeasurable amount of investment capital and time due to their extensive cyber espionage program.<sup>78</sup>

The PLA utilizes an extensive network of ground-based relay stations for space tracking and data processing. These facilities are spread throughout the country. Two to five ships<sup>79</sup> named Space Event Support Ships (SESS) supplement these facilities to provide space operations support beyond China's borders. In addition, it is reported that China operates or has operated space relay stations in Pakistan, Kiribati,<sup>80</sup> Kenya, and Namibia.<sup>81</sup>

China's suite of satellites includes an extensive communications capability. These are dual-use systems and include Chinasat, APStar, Asiasat, and Sinosat series. China maintains numerous satellites for imagery intelligence, remote sensing, synthetic aperture radar imagery, and oceanographic and environmental monitoring, including the Ziyuan, CBERS-2, Haiyin, Jianbing, and Huanjing series. China also operates electronic and signals intelligence satellites. Its positioning and navigation satellite system consists of Beidou and Compass satellites and is similar to the U.S. GPS system in that it provides positional data that enables China to direct missiles accurately against targets at extended ranges. Beidou was the first Chinese satellite positioning system and there are currently four on orbit operating over eastern China and the western Pacific Ocean. Compass

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<sup>78</sup> For documented cyber infiltrations by China, reference 2008 Report to Congress of the U.S.-China Economic and Security Review Commission, 162-164.

<sup>79</sup> The disparity is between the following three sources. Report to Congress of the U.S.-China Economic and Security Review Commission; Richard D. Fisher, *China's Military Modernization: Building for Regional and Global Reach*; United States, Department of Defense. *Annual Report to Congress: Military Power of the People's Republic of China, 2008* (Washington D.C.: 2008).

<sup>80</sup> China was forced to close the Kiribati relay station in 2005 due to a change in government for the island. Richard D. Fisher. *China's Military Modernization: Building for Regional and Global Reach*. Westport, Connecticut: Praeger Security International - An imprint of Greenwood Publishing Group, Inc., 2008, 117.

<sup>81</sup> 2008 Report to Congress of the U.S.-China Economic and Security Review Commission, 159.

(Beidou-2) is the new-generation system. The first Compass satellite was launched in 2007 with an additional 30 satellites planned.<sup>82</sup> The expansion of Compass into a worldwide system indicates that China is planning to eventually operate far from its borders. Additionally, China is a full partner in The European Space Agency's (ESA) Galileo satellite navigation system. ESA plans to have 30 satellites in orbit by the early 2010's.<sup>83</sup>

China has significant antisatellite capabilities. Further, the "planned" capabilities are estimated go far beyond those demonstrated in the January 2007 "test" that destroyed an obsolete Chinese weather satellite (FY-1). They include kinetic direct attack weapons and directed energy weapons for dazzling or damaging satellites, both of which currently are reported to be under development.<sup>84</sup>

China currently does not have space-based early warning satellites. Open source Chinese technical literature suggests that China is developing this capability and that it may be similar to the U.S. Defense Support Program.<sup>85</sup>

While China has made large strides in space technology, they do not currently have the same level of space capability as the U.S. For example, China's Ziyuan imagery satellite has just a three-meter resolution as compared to U.S. commercial remote sensing technology resolutions of one-meter resolution by Geoeye. Similarly, the Beidou/Compass satellite navigation and positioning systems are currently regional

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<sup>82</sup> 2008 Report to Congress of the U.S.-China Economic and Security Review Commission, 159. Fisher, 116.

<sup>83</sup> Fisher, 116.

<sup>84</sup> United States, Department of Defense. Annual Report to Congress: Military Power of the People's Republic of China, 2008 (Washington D.C.: 2008), 28.

<sup>85</sup> Fisher, 116.

system that offers accuracies to 20 meters as compare to the U.S. GPS constellation which offers a global service with accuracies of 2-5 meters.<sup>86</sup> However, their technical advances in such a short time are cause for concern and require attention. The “so what” factor is that in terms of technology, China is approximately where the U.S. was in the late 1970’s, but it is rapidly approaching current technology levels. The insight gained in the upcoming section on Chinese doctrine indicates that they also have a strong national will to gain maximum benefit from the use of space technology, which could spurn even faster development. Strategically, now is the time to engage China about space activities and technologies before they advance past the point that mutual benefits could be offered by the U.S. as leverage for cooperation. Moving on from capabilities, the management of China’s space program may also reflect China’s intentions in space.

There is little insight into how the Chinese military and civil space programs are organized and cooperate. Kevin Pollpeter from the Strategic Studies Institute at Carlisle Barracks in Pennsylvania writes:

China’s space program is inherently military in nature. While cooperation does exist between NASA and the U.S. military, the Chinese space program lacks the bureaucratic walls which make NASA a predominantly civilian organization in both focus and culture. Indeed, China’s space program is a military-civilian joint venture in which the military develops and operates its satellites and runs its infrastructure, including China’s launch sites and satellite operations center. The China National Space Administration, often incorrectly referred to as China’s NASA, mainly functions as a civilian front for international cooperation and as a liaison between the military and the defense industry. In fact, CNSA does not even manage important space cooperative activities like cooperation with Europe on Galileo, which is run by the Ministry of Science and Technology.<sup>87</sup>

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<sup>86</sup> Kevin Pollpeter, *Building for the Future: China’s Progress in Space Technology During the Tenth 5-Year Plan and the U.S. Response* (Carlisle Barracks, PA: 2008) <http://www.strategicstudiesinstitute.army.mil/pubs/display.cfm?PubID=852>, 16.

<sup>87</sup> *Ibid*, 44-45.

According to the 2008 U.S.-China Economic and Security Review Commission Report to Congress, China does not distinguish military space programs from civil space programs. The report claims, the Peoples Liberation Army (PLA) operates all of China's satellites, ground stations and support facilities. This structure appears to support the primacy of military interests while integrating civilian applications for more robust capability, as required.<sup>88</sup> Now that China's space capability and organization has been explored, a review of space strategy and doctrine will further inform how China plans to apply space power.

### **Space Strategy and Doctrine**

On a grand scale, the governing elites of China have three overarching concerns: regime survival, territorial integrity, and domestic stability. Regime survival is the foremost concern of the Chinese Communist Party (CCP), and party leadership is acutely aware that their success hinges upon the satisfaction of the Chinese people and the government's ability to protect Chinese national interests.<sup>89</sup> China's development, from its emergent economy and increased global influence to its growing military might and demand for energy, presents tremendous challenges to China's leaders as they manage the turmoil of massive structural, technological, and social changes. Control maintained by the CCP partially explains the opacity and lack of publically available official documentation on strategy and budget.

Unlike the West, the PRC government does not publish the full gamut of official policy, strategy or doctrine for public consumption on the internet. The closest

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<sup>88</sup> 2008 Report to Congress of the U.S.-China Economic and Security Review Commission, 160.

<sup>89</sup> Robert G. Sutter, *China's Rise in Asia*, Lanham, MD: Rowman and Littlefield, 2005, p. 64.

resemblance to the Western style of openness is the writing and publication of a Defense Five-Year Plan and miscellaneous White Papers. China's most recent National Defense White Paper, a White Paper titled "China's Space Activities in 2008" and Chinese literature will be reviewed.

Since 2000, China has published five Defense White Papers with the most recent being in 2008. The 2008 White Paper claims that "China will not engage in any arms race or pose a military threat to any other country" and that its strategy is "purely defensive."<sup>90</sup> In its evaluation of the current security environment, China claims that "world" wars between nations are unlikely in the foreseeable future. China's national defense policy is characterized as "active defense" and further explained as to "take the initiative to prevent and defuse crises and deter conflicts and wars."<sup>91</sup> The most urgent task facing China's national security is unification and preventing Taiwan's independence.<sup>92</sup> Another aim of China's national defense strategy is fostering a security environment conducive to China's peaceful development. In order to accomplish this, China "maintains military contacts with other countries on the basis of the Five Principles of Peaceful Coexistence, and develops cooperative military relations that are non-aligned, non-confrontational and not directed against any third party."<sup>93</sup> The Five Principles of Peaceful Coexistence originated in the 1950s with an agreement with India over disputed Tibet. The five principles are: 1) Mutual respect for each other's territorial integrity and

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<sup>90</sup> China. Information Office of State Council People's Republic of China, China's National Defense in 2008, January 2009. [http://www.fas.org/programs/ssp/nukes/2008DefenseWhitePaper\\_Jan2009.pdf](http://www.fas.org/programs/ssp/nukes/2008DefenseWhitePaper_Jan2009.pdf) (accessed 15 Mar 09), 7.

<sup>91</sup> *Ibid*, 8. It should be noted that there are distinct differences between the Chinese vernacular of active defense and versus the U.S. Army doctrine of active defense in the mid-1970s.

<sup>92</sup> *Ibid*, 9.

<sup>93</sup> *Ibid*, 48.

sovereignty; 2) Mutual nonaggression; 3) Mutual noninterference in each other's internal affairs; 4) Equality and mutual benefit; and 5) Peaceful coexistence.<sup>94</sup> China also views the United Nations Charter in high regard and states that they will take an active part in maintaining global and regional peace and stability.<sup>95</sup> China also states that they will not be involved in an arms race or pose a military threat to any other nation. Of the Five Principles of Peaceful Coexistence, the third principle would likely cause a potential impediment to space cooperation if human rights became an issue of concern for the U.S.

China pursues a three-step development strategy in modernizing its national defense. “The first step is to lay a solid foundation by 2010, the second is to make major progress around 2020, and the third is to basically reach the strategic goal of building informatized armed forces and being capable of winning informatized wars by the mid-21st century.”<sup>96</sup> Driving growth in China’s economy is the purpose given for the priority in high-tech space development.

Concerning space strategy, China documents achievements in space through the 2006 White Paper titled “China’s Space Activities in 2006.” This publication outlines development activities versus operations or military use of the assets. It summarizes the aims and principles of development, progress within the last five years, development targets/major tasks for the next five years, development policies, and examples of international cooperation.<sup>97</sup> The aims of China’s space activities are:

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<sup>94</sup> 2008 Report to Congress of the U.S.-China Economic and Security Review Commission, 232.

<sup>95</sup> China’s National Defense in 2008, 49.

<sup>96</sup> 2008 Military Power of the People’s Republic of China Report to Congress, Chapter 4. “Informatized” is coined in China’s National Defense in 2008 White Paper as equal to automation and the use of information systems for C2, communication, military action, etc.

<sup>97</sup> China. Information Office of China’s State Council. China’s Space Activities in 2006, October 2006. [http://www.fas.org/programs/ssp/nukes/2008DefenseWhitePaper\\_Jan2009.pdf](http://www.fas.org/programs/ssp/nukes/2008DefenseWhitePaper_Jan2009.pdf)  
<http://www.cnsa.gov.cn/n615709/n620681/n771967/79970.html> (accessed 29 Dec 08), 1.

to explore outer space...; utilize outer space for peaceful purposes, promote human civilization and social progress and benefit the whole of mankind; to meet demands of the economic construction, ...national security and social progress; and to raise the scientific quality of the Chinese people, protect China's national interests and rights, and build up the comprehensive national strength.<sup>98</sup>

China's Space Activities in 2006 White Paper emphasizes enhancing national defense strength, independent and self-reliance development of space technology. Another interesting principle is "adhering to the policy of opening up to the outside world and actively engaging in international space exchanges and cooperation" and the statement that they will do so based on "equality, mutual benefit and peaceful utilization of outer space and common development."<sup>99</sup> The discussion on the application of space systems is generic and is geared more toward space development, economic and national prestige benefits. Interestingly, this is not unlike the reasons the U.S. undertook the Apollo program with such zeal.

Since official documentation fails to mention a military space strategy, a complete understanding of China's political-military space strategy is not possible. There is however, a great deal of Chinese military literature on general doctrine available. While the number of these articles has increased over the past few years, they are not official documents. Hence, analysts must piece together open source literature, official statements, actions, data gathered from interviews and modernization decisions in order to "best-guess" the stratagem of China. This interpretation can be dangerously miscalculated if the strategist has a preconceived notion of what to "prove," but is worth exploring.

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<sup>98</sup> *Ibid*, 2.

<sup>99</sup> *Ibid*, 2-3.

Several authoritative Chinese military analysts have established certain operating principles that the U.S. must consider. Several analysts are also contradictory. For example, PLA strategist Chen Zhou states that China will never carry out a preemptive strike, invade other nations or participate in a fight for hegemony.<sup>100</sup> Richard Fisher counters this claim by stating that this is not what PLA officers are taught. He points out that the PLA National Defense University textbook *The Science of Campaigns* (*Zhanyixue*) says, “The essence of [active defense] is to take the initiative and to annihilate the enemy.”<sup>101</sup> He explains that another PLA NDU textbook, *The Science of Military Strategy*, notes, “Under high-tech conditions, for the defensive side, the strategy of gaining mastery by striking only after the enemy has struck does not mean waiting for the enemy’s strike passively.”<sup>102</sup> It then fundamentally transforms the definition of “first shot” by stating that if “hostile forces such as religious extremists, national separatists, and international terrorists challenged a country’s sovereignty, it could be considered as ‘firing the first shot’ on the plane of politics and strategy.”<sup>103</sup>

Considering hegemony claims made by Chen Zhou, Fisher cites that in early 2005 PLA Air Force (PLAAF) Lt. General Liu Yazhou, told a reporter, “When a nation grows strong enough, it practices hegemony.”<sup>104</sup> That frame of mind along with the fact that China is building long-range power projection forces provides a new view of Chinese intentions. That intention could be, given the Chinese strategies combined with actions

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<sup>100</sup> Chen Zhou, “A Military Strategy for Active Defense for the New Era,” *Xuexi Shibao* online, 18 Mar 08. Available from OpenSource.gov, (accessed 29 Dec 08), 5.

<sup>101</sup> Fisher, 69.

<sup>102</sup> *Ibid*, 69.

<sup>103</sup> *Ibid*, 69.

<sup>104</sup> *Ibid*, 171.

and rhetoric, China's ambition to "resume" its traditional role as a leading power in Asia. As an example, Chen Zhou cites that the 2005 Chinese government promotion of domestic and international celebrations of the 600th anniversary of the first voyage of the famous Ming Dynasty Muslim eunuch Admiral Zheng He suggested that its current economic outreach should be considered as helpful and peaceful as that of the Ming Dynasty. However, Fisher notes that historian Edward Dreyer has written that the purpose of Zheng He's voyages was "to enforce outward compliance with the forms of the Chinese tributary system by the show of an overwhelming armed force."<sup>105</sup> In fact, Zheng He's troops overthrew two governments during his voyages.<sup>106</sup>

Other documentation indicates potential bellicose space strategy for China. In his book *Space Warfare*, Colonel Li Daguang describes PLA goals as, "Destroy or temporarily incapacitate all enemy satellites above our territory, deploy land based and space-based ASAT weapons, counter U.S. missile defense systems, maintain our good international image [by covert deployment], space strike weapons concealed and launched only in time of crisis."<sup>107</sup> Yet other Chinese aerospace literature suggests that the PLA may be developing a space-based, ground-attack weapon system. The advantages it claims is high speed and short reentry times making it extremely difficult to intercept.<sup>108</sup> In other Chinese internet sources, two potential unmanned space combat platforms were revealed in 2007. The first is called the *Shenlong* or "Divine Dragon" and is suspended from a launch aircraft. The second such combat platform is similar to the

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<sup>105</sup> *Ibid*, 170.

<sup>106</sup> *Ibid*, 170.

<sup>107</sup> *Ibid*, 202.

<sup>108</sup> *Ibid*, 204.

French *Hermes* space plane design from the early 1980's. In 1996, a Chinese brochure revealed a wind tunnel model similar to that used for the Hermes. Then in Dec 07, an image of the platform appeared on a Chinese internet source.<sup>109</sup> If the sources of these observations are valid, then the DoD "shaping and hedging" strategy in dealing with China is arguably appropriate.

Needless to say, it can be quite complex when trying to break down the 'real' government positions or intentions through official documentation and military analysis through historians and strategists. The challenge is to be fair and prudent in calculating potential strategies which is a formidable task when national security is at risk. National character can also be derived through a historical analysis of traditional forms of military thought.

### **Historical Perception of Military Thought**

Determining intent is arguably the most complex task of analyzing intelligence information. A thorough study of a nation's military history and influential military theorists can assist in determining intent. Certainly, the most influential historical figure concerning warfare for China is Sun Tzu (596-544 B.C.), the author of *The Art of War*. Sun Tzu is revered and studied intently by China's civil and military leaders as a "superior Chinese contribution to the history of strategic thought."<sup>110</sup> According to Sun Tzu, the highest morality was the survival and expansion of the nation, which required a hearty embrace of war and conflict as an essential art that demanded regular preparation and consideration, "War is a matter of vital importance to the state; a matter of life or

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<sup>109</sup> *Ibid*, 204.

<sup>110</sup> *Ibid*, 7.

death; the road either to survival or ruin. Hence it is imperative that be studied thoroughly.”<sup>111</sup>

Notable principles in the *Art of War* are that all warfare is based on deception and intelligence is critical for victory. Sun Tzu goes on to explain that the methods of achieving deception are “when capable, feign incapacity; when active, inactivity. When near, make it appear that you are far away; when far away, that you are near. Pretend inferiority and encourage his arrogance.”<sup>112</sup> Further, he contends, “Offer the enemy a bait to lure him; feign disorder and strike him. Attack where he is unprepared, sally out when he does not expect you.”<sup>113</sup> To further fan the rhetoric flames and perhaps give credence to the embracing of Sun Tzu’s philosophies, former Chinese Defense Minister Chi Haotian is reported to have said in a speech, “In Chinese history, in the replacement of dynasties, the ruthless have always won and the benevolent have always failed.”<sup>114</sup>

The 2008 U.S.-China Economic and Security Commission Report to Congress claims that the Chinese government practices psychological warfare and deception; they do this, among other reasons, “to influence the perception of its sovereignty claims and discredit opposition to those claims.”<sup>115</sup> Furthermore, it asserts that China uses this approach domestically against the Chinese people and also against target foreign populations. It claims China also employs schemes to create divisions among leaders, their subordinates, and other organizations.<sup>116</sup>

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<sup>111</sup> General Tao Hanzhang, “The Modern Chinese Interpretation of Sun Tzu’s Art of War,” (New York: Sterling Publishing, 1987), 13.

<sup>112</sup> Sun Tzu, Translated by Samuel B. Griffith, “The Art of War,” (New York: Oxford University Press, 1971), 66-67.

<sup>113</sup> *Ibid*, 67, 69. “Sally out” means appear

<sup>114</sup> Fisher, 7.

<sup>115</sup> 2008 US-China Economic and Security Commission Report to Congress, 153.

<sup>116</sup> *Ibid*, 153.

Studying a nation from afar artificially caps the amount of understanding one can gain about strategy and intent. Active strategic dialogue and engagement can fill in the knowledge gaps, preventing paralysis and negative impact to progress.

## **V. Why Cooperative Strategy?**

As indicated by the U.S. and China policy and strategy review, mutually beneficial cooperation is indicated as being welcomed and desired by both countries. No doubt a military clash in space involving the kinetic or non-kinetic destruction of satellite systems would be calamitous on a global perspective, endangering international stability. China is at a relatively early stage of development for their space capability when compared to the U.S. This makes the timing for cooperative engagement ripe with opportunity. And China has already branched out in space cooperative ventures with countries not considered U.S.-friendly, such as Venezuela and Iran.<sup>117</sup> Further, they have clearly expressed a desire to continue their space development activities and arguably, have the indigenous intelligence and technology capital to do so. Additionally, China has become economically critical to some of our closest allies, such as Australia. China is Australia's most important market for natural gas, iron ore and other commodities. They have used this economic leverage to try and prevent Australia's support of the U.S. missile defense system.<sup>118</sup> Certainly, China will use this position of prestige to influence others as well. It is critical that U.S. officials recognize the role that Chinese space activities play in the diplomacy, information and economic elements of power. Despite this, perhaps because of this, cooperation must not be ruled unthinkable.

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<sup>117</sup> China's Space Activities in 2006, 3.

<sup>118</sup> Fisher, 62.

Cooperation can prevent conflict escalation, increase safety in the space environment, prevent hefty cost burdens on an already strained national/defense budget and make China's opaque space program more transparent. There are also impediments to overcome in order to fully implement a cooperative strategy. Those potential friction points include political will, U.S. and China export controls and speculation that cooperative efforts will ultimately be ineffective. Cooperation however, should not directly improve China's military or commercial capabilities and give them an edge over the U.S.

### **Benefits**

Prevent Crisis Escalation. Communication between the U.S. and China on space issues has been limited. Accordingly, there is a great deal of misinterpretation, misrepresentation and poor assumptions made by each side as to their respective intentions in space. The U.S. must not assume it understands the intentions of China and should strive to learn more from China through study and personal interaction. Two Congressmen, Reps. Mark Kirk and Rick Larsen reinforce this idea. They serve as co-chairs of the U.S.-China Working Group in the House of Representatives (as of Jan 2006). The working group was formed in Jun 2005 to raise awareness about China among Congressional members and advise them on how to work with the country. Rep. Kirk has stated that "the House view toward China is relentlessly negative and highly misinformed."<sup>119</sup>

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<sup>119</sup> Jeff Foust, "U.S.-China Space Cooperation: The Congressional View." The Space Review. <http://www.thespacereview.com/article/661/1> (accessed 16 Oct 08).

Lack of communication breeds mutual suspicion and uncertainty. The more informed one is about another nation's culture, history and normal social behaviors, the more the tide of misperception can be stemmed. Increased dialogue between the U.S. and China would lay the ground work for bilateral security arrangements, force posture and the use of space. Even during the most tenuous times in the Cold War, the U.S. and Russia were able to agree to treaties such as Strategic Arms Limitations Treaty (SALT) and the 1972 ABM Treaty. Although these treaties were arguably the result of a common understanding that national survival was at stake, lessons learned can and should be effectively applied in other situations.

Strategic dialogue also helps to “put a face to the name” and increase familiarity between both parties. Over time, such communication will facilitate a shared vocabulary and establish formal and informal guidelines to distinguish between appropriate and destabilizing behavior. Further, data shared between countries would be considered more trustworthy. This would create an atmosphere such that the U.S. may open opportunities to share pertinent information or intelligence on potential anti-U.S. actors to help China assess their future relationships and collaboration with those countries. If agreements between China and the U.S. were made today before a potential “space race” begins, this would help both sides avoid miscalculation by tempering mistrust and uncertainty with a degree of transparency and predictability, thus preventing potential crisis escalation.

Another benefit to U.S.-China space cooperation is increased safety while operating in the space environment.

Increase Space Environment Safety. Currently, there are over 890 operational satellites, owned and operated by 41 nations as well as a number of other countries

working in consortiums with each other or with industry partners.<sup>120</sup> As the number of nations tapping into the space resources increases, competition for real estate in space or more specifically, usable orbits and radio frequency spectrums, increase. Additionally, on-orbit collisions with space debris or other spacecraft are becoming increasingly worrisome.<sup>121</sup> There are organizations and committees established to help facilitate some of these issues and provide rules of the road for space. For example, the International Telecommunications Union (ITU) was created in 1963 to coordinate space spectrum and prevent interference. The ITU is composed of governments who join as member states by signing the International Telecommunications Convention, as well as private commercial industry who join as “sector members” but have no voting rights.<sup>122</sup>

International efforts to control the effects and amount of space debris have resulted in the establishment of the Inter-Agency Debris Coordination Committee (IADC) in 1993 as a mechanism for space agencies to exchange information. The IADC is currently comprised of 11 member nations.<sup>123</sup> The primary purposes of the IADC are to “exchange information on space debris research activities between member space agencies, to facilitate opportunities for cooperation in space debris research, to review the progress of ongoing cooperative activities, and to identify debris mitigation options.”<sup>124</sup>

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<sup>120</sup> Union of Concerned Scientists, UCS Satellite Database, [http://www.ucsusa.org/nuclear\\_weapons\\_and\\_global\\_security/space\\_weapons/technical\\_issues/ucs-satellite-database.html](http://www.ucsusa.org/nuclear_weapons_and_global_security/space_weapons/technical_issues/ucs-satellite-database.html) (accessed 31 Dec 08).

<sup>121</sup> The recent Iridium 33 (U.S. commercial communication satellite) and COSMOS-2251 (Russian communication satellite) collision highlights the need for cooperation and a set of standards for conduct in space.

<sup>122</sup> International Telecommunications Union, “ITU Overview – Membership,” <http://www.itu.int/net/about/index.aspx> (accessed 2 Jan 09). There are currently 191 ITU member states and more than 700 sector members.

<sup>123</sup> Inter-Agency Space Debris Coordination Center, <http://www.iadc-online.org/> (accessed 2 Jan 09).

<sup>124</sup> *Ibid.*

The IADC sends recommendations and guidelines to the UN's Committee on the Peaceful Uses of Outer Space (COPUOS) and, if agreed upon, they are forwarded to the UN General Assembly for approval.

As new players join the satellite “game”, there is bound to be a learning curve. The less experienced operators lack familiarity with the informal rules employed by long-established players and often fail to comply with best practices such as launch notification, maneuvers and close approaches.<sup>125</sup> The U.S. cooperation with China (and other nations) in this area could drastically reduce the potential number of accidents and increase the safety of operating in the space environment.

One way to ensure success would be to establish an international framework to outline “rules” and best practices for orbital insertion and maneuver. This could include a pre-launch notification system, safety provisions for manned space flight, intentional de-orbits and debris mitigation. Ensuring better access to the U.S. Space Surveillance Network (SSN) data and sharing lessons learned would be critical to the success of this venture.

Another benefit to U.S.-China space cooperation is preventing over-spending on potentially expensive space-race technology to include space-based offensive weapons.

Prevent Over-Spending. In 2007, it was estimated that the U.S. annual Defense Department budget (excluding Department of Energy funding and the cost of wars in Iraq and Afghanistan) had increased by \$143 billion since 2001. Adjusted for inflation,

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<sup>125</sup> Theresa Hitchens, “Debris, Traffic Management and Weaponization: Opportunities for and Challenges to Cooperation in Space.” *The Brown Journal of World Affairs*; Fall 2007; Vol. 14, Issue 1, 172.

military spending has grown 27% over this period.<sup>126</sup> Furthermore, a study of the fiscal year 2008 defense budget by the World Security Institute's Center for Defense Information and the Secure World Foundation could only find about \$1 billion in potential space weapons-related research and development funding.<sup>127</sup> Obviously, with regards to U.S. space weapons development, budgetary realities have not equaled declaratory policy. Further, a build-up of space-based missile defense and counter-space weapons would require a major investment at a time when defense is fiscally constrained due to OPERATION IRAQI FREEDOM and OPERATION ENDURING FREEDOM. The lack of available funding along with the premise that Democrats have traditionally opposed increased defense spending, leads one to believe that a near-term ramp-up in defense funding appears improbable. Furthermore, the U.S. economy is in no shape to take on a defense budget spike. The U.S. debt is at an all-time high of \$10 trillion<sup>128</sup> and the economy is currently in a recession.

While some would argue that this would make the U.S. more vulnerable to the Chinese expansion of space capability, for others who are more optimistic it would be logical to try to prevent the massive spending that would have to occur to fund a counter-space weapons program. Cooperation could also reveal some duplicative space efforts common to both the U.S. and China which could prove mutually beneficial for both countries.

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<sup>126</sup> Friends Committee on National Legislation, March 2006 Newsletter, No. 705, <http://www.fcnl.org/now/pdf/2006/mar06.pdf>, (accessed 2 Jan 09), 3.

<sup>127</sup> Theresa Hitchens, "Debris, Traffic Management and Weaponization: Opportunities for and Challenges to Cooperation in Space," 180.

<sup>128</sup> Treasury Direct, [http://www.treasurydirect.gov/govt/reports/pd/histdebt/histdebt\\_histo5.htm](http://www.treasurydirect.gov/govt/reports/pd/histdebt/histdebt_histo5.htm) (accessed 2 Jan 09).

One final benefit to U.S.-China space cooperation is increasing the transparency of the Chinese space program.

Increase Chinese Space Program Transparency. China's ASAT did more than surprise the world. It placed doubt in the minds of those who thought China's intentions in space were benevolent, especially considering their strong movement toward banning space weapons through the U.N.'s Disarmament Convention. It also re-energized the "China-hawks" and conservative think tanks that support the full development of space-based missile defense.<sup>129</sup> The ASAT test reinforces the need for China to increase the transparency of their intentions for space operations.

The U.S. does not go without blame in this area. Since the 1960's, NASA has published data from the SSN Space Control Center, eventually making it free to the public through its web site. But recently, access to this data has become more restricted. In 2003, legislation was passed stating that the Defense Secretary's approval was required for all users and those approved are not allowed to redistribute the data.<sup>130</sup> The end result of this is increased opacity in U.S. space activities. Just as China's transparencies breed suspicion, the U.S.'s transparency could raise more concern outside the U.S., especially given the openly acknowledgment of current U.S. capabilities in space and when accompanied with bold rhetoric so common from U.S. government officials.<sup>131</sup>

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<sup>129</sup> See statement by Jeff Kueter of the George C. Marshall Institute. Jeff Kueter, "Crossing the Rubicon in Space Again: Iacta Alea Est," George C. Marshall Institute, January 2007, <http://www.marshall.org/pdf/materials/492.pdf> (accessed 2 Jan 09).

<sup>130</sup> Johnson-Freese, "Space as a Strategic Asset," 246.

<sup>131</sup> *Ibid*, 246.

Quid pro quo transparency would have a lasting effect in preventing a miscalculation of either country's actions. The cooperation should occur before both countries come under increased domestic pressure to adopt more confrontational policies toward each other. The coupling of fierce security competition with quickly deployed and poorly understood weapon systems could be destabilizing.

While there are many benefits associated with a cooperative space policy, several challenges are present as well. The first potential impediment is political will.

### **Impediments**

Political Will. Political will by both countries are required for successful cooperation. There are two issues that could negatively affect this – human rights and non-proliferation.

China is widely criticized for human rights violations and non-democratic governance. The military response to the 1989 Tiananmen Square protests still lurks in the memories of the democratic West. The 1989 Tiananmen Square incident was sparked by the death of pro-democracy official Hu Yaobang. While the protests lacked a unified cause, participants were generally against the authoritarianism and voiced the need for economic liberalization and democratic reform within the PRC government structure.<sup>132</sup> The military response resulted in massive civilian injuries and deaths. China continues to limit freedoms and access to information of the Chinese public today through many controls. The Chinese government has created an information control regime intended to regulate nearly every venue that might transmit information to China's citizens: the print and broadcast media, the Internet, popular entertainment, cultural activities, and

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<sup>132</sup> Fisher, 24.

education.<sup>133</sup> Personnel working in the media, educational, and cultural fields have been conditioned into self-censorship by the rewards and punishments of China's information control system. These personnel also face possible fines, demotion, termination of employment and even prison for publishing information contrary to the Chinese Communist Party's (CCP) preferred narratives.<sup>134</sup> Further, the Central Propaganda Department's central purpose is to perpetuate the political authority of the CCP by concealing negative information about the party and its history and by propagating articles intended to bolster the party's authoritarian rule. The propaganda system also actively seeks to inflame Chinese nationalism as a means of legitimizing the party's authority.<sup>135</sup> Lack of basic freedom and a democratic government conflicts starkly with the U.S. principles and could affect any future agreement with China. In fact, the U.S. imposed an arms embargo following the Tiananmen Square incident, which remains in force today.<sup>136</sup> This is certainly an issue that will require resolution as cooperation progresses, but does not legally prevent strategic dialogue. When U.S. values and the Chinese premise of mutual noninterference intersect, strong diplomatic influence with a clearly defined way ahead will be mandatory.

Since the 1990s, the PRC government has been criticized for its proliferation of weapons of mass destruction, missiles and technology associated with both. The U.S.-China Economic and Security Commission have observed a gradual improvement in the China's nonproliferation behavior since 2001. Principal Deputy Assistant Secretary of

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<sup>133</sup> 2008 U.S.-China Economic and Security Commission Report, 15.

<sup>134</sup> *Ibid*, 15.

<sup>135</sup> *Ibid*, 15.

<sup>136</sup> Fisher, 10.

State for International Security and Nonproliferation, Patricia McNerney, acknowledged that this change has occurred in part because, “the Government of China has come to recognize that it has a fundamental security interest in becoming a responsible nonproliferation partner.”<sup>137</sup>

There are, however, two pertinent nonproliferation agreements that China has not joined, the International Code of Conduct against Ballistic Missile Proliferation and the Wassenaar Arrangement. The International Code of Conduct against Ballistic Missile Proliferation is intended to “end the proliferation of Weapons of Mass Destruction (WMD)-capable ballistic missiles, to exercise restraint in developing and testing such technology, and to participate in transparency measures such as annual declarations of missile and space launch programs.”<sup>138</sup> The Wassenaar Arrangement “establishes lists of dual-use goods and technologies and conventional arms for which members are to develop export controls in order to promote transparency and greater responsibility in international transfers of such arms, goods, and technologies.”<sup>139</sup> By not joining these conventions, China continues to increase suspicion as to what they would be willing to share with third-party countries and if they would compromise revealed U.S. technology. In fact, Principal Deputy Assistant Secretary McNerney affirmed that China’s export control enforcement lacks transparency. She said that even when the U.S. alerts the PRC government that specific sales may result in the illicit use of weapons or technology, the

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<sup>137</sup> 2008 U.S.-China Economic and Security Commission Report, 126.

<sup>138</sup> *Ibid*, 129.

<sup>139</sup> *Ibid*, 129.

trade deals continue.<sup>140</sup> This must be curtailed in order to wage successful space cooperation.

Similarly, the U.S. continues to sell Taiwan massive amounts of military equipment to include fighter jets, maritime patrol and anti-submarine aircraft, torpedoes, anti-ship cruise missiles and helicopters. In Taiwan's 2008 defense budget, \$11B was allocated toward U.S. arms purchases.<sup>141</sup> The U.S. government has drawn harsh criticism from China as China claims territorial control over Taiwan and wishes to prevent Taiwan's independence as discussed in Chapter IV. In response to the 2008 Congressional notification of arms sales to Taiwan, a spokesman for the PRC's Ministry of Defense denounced the sales as "reckless" and said they "violated the atmosphere for bilateral military relations and gravely jeopardized China's national security."<sup>142</sup> Consequently, Beijing abruptly cancelled a few military-to-military contacts with the U.S., threatened to halt port calls by the U.S. Navy and threatened to withdraw from meetings concerning the restriction of the proliferation of WMD.<sup>143</sup>

Perceived violations of human rights and weapons proliferation promulgation clearly affect the political will to successfully negotiate a cooperative space strategy. Another impediment to U.S.-China space cooperation is the export controls levied by the U.S.

Export Controls. There are several reasons why a country may want to limit the amount of technology and intellectual capital transfers to another nation. The primary

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<sup>140</sup> *Ibid*, 136.

<sup>141</sup> *Ibid*, 259.

<sup>142</sup> *Ibid*, 260.

<sup>143</sup> *Ibid*, 260.

reason is the possibility of gaining a capability that threatens national security. Several comparative examples reveal similarities between China's military capabilities and those of the U.S. and Russia. China's Long March rocket bears striking similarities to the U.S. Delta, Atlas and Titan commercial launchers. It is also not coincidence that China's manned space flight launch center at Xichang is at approximately 28 degrees north latitude, while the Kennedy Space Center is at 28.5 degrees north latitude.<sup>144</sup> This makes it easier for China to emulate U.S. post-launch procedures which is widely available through open source U.S. literature. Similarly, China's Shenzhou manned space craft is bears similarities of the Russian Soyuz even though China appears to have improved the design.<sup>145</sup> This ultimately has led to tighter U.S. export controls to prevent technology transfer. One of the most encompassing export controls is the International Traffic in Arms Regulations (ITAR).

ITAR is a set of government regulations that control the export and import of defense-related articles and services that are on the U.S. Munitions List. The Department of State interprets and enforces ITAR. The intended goal of ITAR is to "safeguard U.S. national security and furthering U.S. foreign policy objectives via the trade controls."<sup>146</sup> U.S. corporations can face heavy fines and potential imprisonment if the State Department discovers they have (without approval or exemption) provided non-U.S. persons with ITAR-protected products or information such as designs, test data, software code, etc.<sup>147</sup>

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<sup>144</sup> Johnson-Freese, "Space as a Strategic Asset," 209.

<sup>145</sup> *Ibid* 209.

<sup>146</sup> United States, Department of State, Directorate of Defense Trade Controls, <http://pmddtc.state.gov/index.html> (accessed 2 Jan 09).

<sup>147</sup> *Ibid*.

While ITAR goals are worthy, some argue that it prevents U.S. companies to compete more effectively in international markets and to increase their knowledge of foreign space programs. For example, the French company Alcatel recently developed an “ITAR-free” satellite, meaning that “no components of U.S. origin were used, and so the satellite was not subject to US export laws.”<sup>148</sup> Additionally, U.S. firms were not allowed to bid on this contract. This argument is valid when many “ITAR-protected” commercial space technologies are widely available in the international market.<sup>149</sup>

While limiting the export of existing technology may reduce competition for U.S. corporations in the international market, many western firms are reluctant to bring high-value technologies into China out of fear that reverse engineering or outright theft of technology designs may occur. Until China can prove that intellectual property is respected and protected, and until violations are effectively prosecuted, the transfer of new technology to China will be delayed in many cases.<sup>150</sup>

The final impediment to be discussed is that cooperation in space may be considered to be an ineffective method toward continued freedom of movement in the space environment given that the risks will outweigh the benefits.

Ineffectiveness. Space collaboration with China and the degree of success in creating transparency will be dependent on perceived necessity, budget allocations and feasibility. In the 2006 CNA Conference Report, some argued that increased cooperation

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<sup>148</sup> “China’s Space Program: Civilian, Commercial and Military Aspects,” CNA Conference Report, May 2006, <http://www.cna.org/documents/China%20space%20conference%20final.pdf> (accessed 4 Jan 09), viii.

<sup>149</sup> James Clay Moltz, “Space Conflict or Space Cooperation?” Center for Non-Proliferation Studies, <http://cns.miis.edu/pubs/week/060126.thm> (accessed 16 Oct 08).

<sup>150</sup> 2008 U.S.-China Economic and Security Review Commission Report to Congress, 217.

will not produce tangible benefits for the U.S., especially without a new bilateral political climate.<sup>151</sup>

An unanticipated benefit of a cooperative strategy could be that China would become increasingly dependent on space capabilities potentially rivaling the deterrent value of space warfare technology and the demonstrated willingness to use it. Michael Krepon, Co-founder of the Henry L. Stimson Center and space security expert, claims that states are deterred from space warfare by their inherent dependence on satellites: “Because every space faring nation can lose badly in the event that vulnerable and essential satellites are damaged...a rudimentary deterrence against satellites exist...”<sup>152</sup>

A positive step in a cooperative direction occurred in February 2008 when the U.S. and China agreed on a “new communications hotline between the U.S. military and the Chinese Ministry of National Defense.”<sup>153</sup> They also agreed to move forward with a nuclear strategy and policy dialogue, the first phase will involve Chinese military officers and military academics and their U.S. counterparts. In fact, U.S. Deputy Assistant Secretary of Defense for East Asia David Sedney stated that China has not reciprocated U.S. efforts to discuss China’s counter-space programs, as well as its ASAT test.<sup>154</sup> While neither country has agreed that these nuclear strategy and policy talks will include discussion on space issues, it is a start in initiating strategic dialogue with China. While

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<sup>151</sup> “China’s Space Program: Civilian, Commercial and Military Aspects,” CNA Conference Report, 10. This report points out that cooperation between the U.S. and Russia did not occur until after the fall of the Soviet Union and suggests that the same is required for China in order to have successful U.S. cooperation.

<sup>152</sup> Michael Krepon, “China’s Military Space Strategy: An Exchange.” *Survival* Issue 50 Number 1 (February 2008). [http://pdfserve.informaworld.com/914200\\_\\_790435634.pdf](http://pdfserve.informaworld.com/914200__790435634.pdf) (accessed 2 Jan 09).

<sup>153</sup> Jeremy Patterson, “Hotline to Link U.S.-Chinese Militaries,” *Arms Control Today*, April 2008. [http://www.armscontrol.org/act/2008\\_04/Hotline](http://www.armscontrol.org/act/2008_04/Hotline) (accessed 2 Jan 09).

<sup>154</sup> U.S. Department of Defense News Briefing with David Sedney, March 3, 2008, <http://www.defenselink.mil/transcripts/transcript.aspx?transcriptid=4165> (accessed 2 Jan 09).

this is a good start, a well-developed strategy is required to provide a path forward for the U.S.

It is imperative to note that China does not share the U.S.-Soviet experience with arms control, deterrence, and mutual satellite reconnaissance. It is from these experiences that the U.S. military, as well as other space faring nations, has internalized norms into doctrine and operations, but China does not necessarily accept or share them.<sup>155</sup> If key Chinese decision makers were integrated into the international space system, consequently, the cost of Chinese violations of international norms would rise.

Now that the benefits and potential impediments of a cooperative space strategy with China have been outlined, a baseline strategy will be proposed.

## **VI. US-China Cooperative Space Strategy**

Strategy can be defined as a logical compilation of ends or objectives, ways or methods and means or resources. The risks are then examined to ensure the planners and executors of the strategy are mindful and cautious about the potentially dangerous pitfalls. Any U.S. defense strategy should also align with the National Security Strategy, National Defense Strategy and the National Military Strategy. It should also follow guidelines established by policies and treaties; in this case, the U.S. National Space Policy and the 1967 Outer Space Treaty. This is not meant to be an all-encompassing strategy, but merely a skeleton structure and beginning thoughts that will require further development. The following are potential objectives of a U.S.-China cooperative space strategy.

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<sup>155</sup> Vince Manzo, "U.S. Policy Brief: The Need for a Strategic Dialogue with China," Center for Defense Information, 2008, <http://www.cdi.org/pdfs/StrategicDialoguePolicy.pdf> (accessed 22 Sep 08).

### **Ends (Objectives)**

The following objectives would guide the U.S. cooperative relationship with China. The goals of cooperation are to promote security, deter conflict and assure access and freedom of movement in the operating environment.

Promote Security. The 2008 NDS states that the best way to achieve security is to “prevent war when possible and to encourage peaceful changes within the international system.”<sup>156</sup> The U.S. should continue to plan against alternate possibilities if cooperation fails, but arguably prefers to continue operating peacefully within the space environment. The U.S. considers decisive interference with its space systems as an infraction on its rights.<sup>157</sup> As China relies more heavily on space technology, both domestically and militarily, they will potentially realize the negative effects of implementing counter-space methodology.

Deter Conflict. Deterrence involves influencing the political and/or military decisions of a nation. We must ensure that China realizes that the cost of potential nefarious and aggressive action in space against the U.S. would be too high in relation to its likely success. Continuous strategic dialogue with China concerning space operations issues will help build mutual trust and reduce the risk of miscalculation. A peaceful and prosperous China can help stabilize the international environment if it participates as a responsible stakeholder.<sup>158</sup>

A cooperative space relationship between the U.S. and China, either in bi-lateral terms or in space consortia will lead to increased security by shaping China’s choices and

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<sup>156</sup> 2008 U.S. National Defense Strategy, 9.

<sup>157</sup> 2006 U.S. National Space Policy, 1.

<sup>158</sup> 2008 U.S. National Defense Strategy, 10.

advancing national security and foreign policy objectives. Over the long term, with patience and determination, deterrence can be realized.

*Assure Access and Freedom of Movement.* The U.S. must assure access and freedom of movement in order to continue enjoying the critical capabilities delivered by space assets and the benefits of operating in the space environment. This attitude should apply for every nation that relies on space capabilities. Space is considered part of the global commons and outer space should be used by all nations for peaceful purposes, and for the benefit of all peoples.<sup>159</sup> The U.S. considers the ground, space and linking segments vital to its national interests and as such we must have assured access and freedom of movement with, in or around this environment.<sup>160</sup>

There is growing concern that China may not view space as a global commons. While China's land borders for the most part have been demarcated, China has recently sought to assert sovereignty over its space territories. Some of China's actions pose challenges to the U.S. and its security relationships in Asia.<sup>161</sup>

Asserting sovereignty over space is counter thinking to most space-faring nations and is also impractical since the laws of physics dictate that objects in orbit will rotate freely around the earth over land masses. It would be counter-productive to declare territorial claims in space and therefore, declare that any orbiting object could be rightfully disabled or attacked when it passes through those territorial boundaries. Assuring access and freedom of movement in space is a prerequisite and therefore, a formidable goal for space cooperation.

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<sup>159</sup> 2006 U.S. National Space Policy, 1.

<sup>160</sup> *Ibid*, 1.

<sup>161</sup> 2008 U.S.-China Economic and Security Commission Report, 140-141.

### **Ways (Methods)**

The following are methods of achieving the goals of U.S.-China cooperation:

Build a cooperative, mutually beneficial relationship; Protect U.S. space technology; Establish and promulgate space operations “rules of the road”; and Create agreements with appropriate treaties or other forms of accord.

*Build Cooperative, Mutually Beneficial Relationships.* One of the principles in the 2006 U.S. National Space Policy is that the U.S. will seek to cooperate with China in the peaceful use of outer space to extend the benefits of space, enhance space technologies, and to protect and promote global freedom.<sup>162</sup> In order to achieve strategic partnership with China, the U.S. must learn more about their history and values. Historically, it is especially important to understand the global leadership role Imperial China played starting with the Qin Dynasty, past territorial disputes, and contexts involving the U.S. such as the Chinese Civil War and the Korean War. Chinese culture is very different from the U.S. and its history is vast, but it is important to try and understand customs and courtesies in order to foster good relations.

Naming our partners and allies also has an impact on relations. For example, “most favored nation” obviously has a friendlier connotation than “axis of evil.” A naming convention in this strategy must foster good and stable relations. China can definitely be considered a peer competitor, but a responsible China should be referred to as a “Strategic Partner.”

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<sup>162</sup> 2006 U.S. National Space Policy, 1. This is also reinforced in the 2006 QDR and 2008 NDS as discussed in Chapter III.

Many of our key allies have emerging relationships with China, such as Australia and Great Britain. The U.S. currently has the strongest space cooperation with both Australia and Great Britain. Partnering with these allies and with China could help facilitate trust and confidence building measures in order to build cooperative relations. Shared environmental, meteorological, position, navigation and timing information would also be beneficial for both countries.

Of course, the U.S. must realize benefits from a cooperative relationship as well. This could prove to be challenging since the U.S. is more technically advanced in space than China. The U.S. benefits will likely be realized in creating a safer space environment and having a strategic partner with the means to act as a responsible party.

Cooperative relationships should be shaped with the follow-on potential for joint activities. Joint activities will definitely be preceded by strong political commitment. Potential joint activity options are solar system exploration, environmental observations and international space station partnership. Successful civilian activities would set important precedents for prospective military joint activities.

*Protect Technology.* A robust science, technology, and industrial base are vital for U.S. space capabilities.<sup>163</sup> As such, U.S. technology will be protected so as to not divulge sensitive or classified technology. However, a balance will be required to ensure the U.S. industrial base remains competitive in the global market.

International Traffic in Arms Regulations (ITAR) was designed to protect critical technology with a more encompassing goal of protecting U.S. national security. It has undoubtedly contributed to increased national security, but may also be limiting U.S.

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<sup>163</sup> This is underscored by the 2006 NSP as discussed in Chapter III.

corporations that can be squeezed out of international markets. The State Department is responsible for enforcing ITAR. As such, they should assess ITAR as a whole to evaluate the potential for adjustment to facilitate better international corporate competition. While adjustment may not be possible due to the national security risks it would impose, the review should still be pursued to dispel contention among the commercial industry community.

The U.S. should also encourage China to join the International Code of Conduct against Ballistic Missile Proliferation and the Wassenaar Arrangement to indicate responsible control of transferred technology.<sup>164</sup>

*Rules of the Road.* In order to make space operations safer, U.S. civil and military space leaders should endorse and encourage use of certain “rules of the road” for China and other nations who operate in space. This framework would help to assure access and freedom of movement within the space environment by reducing risk of avoidable accidents.

The rulebook should contain potential physical collision and electronic interference -avoidance measures. Official notification of Chinese space launches and acceptance of U.S. space situational awareness data from the Space Surveillance Network to prevent physical collision would be a reasonable starting point. Continued compliance with the International Telecommunications Union (ITU) requirements should also be included in any common space operations play book.

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<sup>164</sup> The International Code of Conduct against Ballistic Missile Proliferation and the Wassenaar Arrangement are discussed thoroughly in Chapter V.

Common discussion on space policy norms would allow the U.S. to revisit the 2006 U.S. National Space Policy and perhaps realign it toward the 1967 Outer Space Treaty to reassert the tenets of “free access to” and “freedom of passage” in space.<sup>165</sup>

*Treaties or Other Forms of Accord (e.g. SALT, START, etc.).* Chinese opacity is currently an impediment to successful U.S.-China cooperation in space. Evidence implies China continues to conduct economic diplomacy via trade, investment and development aid with a “no strings attached” policy – referring to the lack of transparency, good governance and respect for human rights.<sup>166</sup> This is an obvious concern if China applies this policy to defense related technology to make economic or resource gains. In order for a U.S.-China cooperative space strategy to succeed, the U.S. must have assurances that China will responsibly control all transferred technology.

Confidence building measures created in a cooperative, mutually beneficial relationship could eventually form the basis for a bi-lateral treaty between the U.S. and China. It is arguably easier to agree to formal accords while on good terms rather than trying to agree to them during dire straits. In anticipation of each country’s desire to gain the high ground of space, formal agreements combined with monitoring regimes would provide an orderly development of space capabilities deemed appropriate by the terms of the accord.

With the ends and ways defined, means or resources required to realize the objectives will be outlined next.

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<sup>165</sup> 1967 Outer Space Treaty, 2.

<sup>166</sup> 2008 U.S.-China Economic and Security Commission Report, 240.

### **Means (Resources)**

Implementation of any strategy is predicated on developing, maintaining and, where possible, expanding the means required to execute its objectives within budget constraints. The challenges of a cooperative strategy will require resourcefulness and an integrated approach that balances risks and assets. The following resources will be utilized to implement U.S.-China space strategy: Space professionals; Language and cultural training; Interagency cooperation; and Strategic communication.

*Space Professionals.* From the operator to the acquisitions professional, space professionals provide the backbone to the U.S. successful space capabilities. Leadership in the space community is key to establishing opportunities for cooperation with China. Leaders may be required to subvert personal paradigms and prejudices to outline a way forward.

Space professionals who are chosen to further this strategy are the ‘eyes and ears’ in determining Chinese intentions and should remain sensitive to ill-intended consequences of casual discussion that could potentially delve into sensitive information. Further, language training and cultural immersion will be critical for all space operators who are involved in Chinese cooperation activities.<sup>167</sup>

*Language Training/Cultural Immersion.* All U.S. military space professionals attend required training to progress within their career field. The courses are delivered by the National Security Space Institute (NSSI). While much focus is on preparing U.S. space professionals to employ space power, Chinese capability studies would help space experts to better understand our potential partner. Furthermore, preparation training for

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<sup>167</sup> Reinforced by the 2006 NSP.

exchanges and short-term visits to China and potentially Chinese space professional trips to the U.S. would help each country develop further understanding of the other.

*Interagency Cooperation (NASA, DoS, etc).* Since space operations encompass both civil and military arenas, the Department of Defense (DoD) will not be able to implement successfully this strategy alone. Interagency cooperation will be required from the State Department, NASA and perhaps others to reach out to additional Chinese government areas. This will also prevent duplicity in efforts and ensure unity in the direction of cooperation.<sup>168</sup>

*Strategic Communications.* The U.S. message to China will continue to play an important role in a focused approach to cooperation. This has traditionally been a weakness across the U.S. government. As such, a strategic communications plan for a cooperative space strategy should include accurate and timely intelligence and information to increase U.S. credibility and sincerity. Openness from both nations will help build mutual trust, promote security and deter conflict. Also, the name by which the U.S. refers to China will promote respect or further distrust.

There are no guarantees that China will respond favorably to any U.S. strategy. Therefore, there are certain risks and challenges that must be heeded while employing the methods of cooperation.

### **Risks/Challenges**

There are several challenges accompanying a cooperative space strategy with China. They are the potential for technology transfer, fiscal constraints and ethical concession.

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<sup>168</sup> Referenced in 2006 NSP.

### Technology Transfer

We must have assurances from China that they will protect any technology or intellectual property exchanged. Proliferation resulting from weak intellectual property protection is a real possibility and must be prevented. This issue can also be addressed in more detail in the strategic communication plan to include ramifications from violating transfer agreements.

Fiscal Constraints. Fiscal constraints are relative and not just notable in an environment of economic downturns. But, it is questionably more difficult to argue for increased defense spending during periods of heightened fiscal awareness. A renewed space race with China or a containment strategy would likely cost millions of dollars (or more) of new spending. The reduced likelihood of this level of funding makes a cooperative strategy more palatable. Likewise, increased cooperation with China will add additional costs to budgets across the military, civilian and agencies involved in the efforts, but arguably not as much as the alternative.

Ethical Concession. Any space cooperation with China would likely be immediately halted if China was perceived to violate human rights. China has been widely criticized for its stance on human rights and nondemocratic government. Any cooperation that is perceived to improve the standing or increases the power of authoritarian Chinese leaders might be viewed as unacceptable.<sup>169</sup> Moral compromise must not be allowed even if it temporarily ends cooperative growth with China.

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<sup>169</sup> Jeffery Logan, Congressional Research Service Report to Congress, China's Space Program: Options for U.S.-China Cooperation, 14 Dec 07, 5.

Implementing this cooperative strategy successfully will require strong support and leadership throughout the government. The U.S. has a responsibility to be proactive in shaping the future activities in the space environment. If China has concerns about U.S. missile defense or other future space capabilities, then there is an inherent responsibility to define our intentions to allay fears of future use. But, this message is better received if it comes from a partner who is truly interested in breaking down barriers in security competition and treats China as a respected partner in space.

Of course, the U.S. should not become complacent in the space environment. Just as the NSS and NDS state, we should hedge our bets and prepare to protect space capabilities with mitigation strategy. This can be enabled through the expansion of the Operationally Responsive Space concept, increased situational awareness of space assets and developing replacement technology on unmanned aerial systems. When contemplating the hedge for China, the risk of creating a security dilemma must be considered. That is in the quest to gain the upper hand and increase national security, the opposite may be the eventual outcome if the alternative plan is considered hostile by China. Although a peaceful future in space cannot be guaranteed, it cannot be ignored, so adaptation in strategy and perhaps even doctrine and training must be weighed in order to maintain the high ground of space.

## **VII. Conclusion**

There is no crystal ball when determining the future of the security environment. Developing strategy for an unknown future requires an in-depth review of the current situation. This is to be followed by a glance at current treaty, policy and national strategy in order to establish the guidelines of what would be considered permissible. Finally,

China deserves insightful study to ensure an effective strategy is developed. Furthering understanding of China could also, perhaps, be a profound reason for implementing a strategy. Likely, benefits, impediments and risks will be evaluated to determine whether the strategy is likely to fail or succeed.

The effort required to make space cooperation with China a reality will be complicated with challenges, but the benefits of increased national security and stability will make it worth pursuing. This however cannot happen without impetus. Increased security, stability, ensuring freedom of access and movement in the space environment is a real possibility...one that lays directly on the shoulders of U.S. space leaders. The U.S. cannot afford to sit idly while China continues to increase their space capabilities. As such, the U.S. response to China's rise as a space power must be reflected in a balanced cooperative strategy in which challenges are managed and opportunities exploited.

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### **Vita**

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